

Praslin. Its palms are either male or female, and our examination of more than 300 of its nuts showed that they are of two distinct, structurally different forms in approximately equal proportions, both kinds growing on the same female tree. The case is, so far as I know, unique.

Of the land animals we did not attempt to collect the birds, as they were already sufficiently known. Moreover, most of the peculiar Seychelles species would seem to have been nearly, if not entirely, destroyed by paid collectors. The Government of the Seychelles has, however, promised an ordinance to hinder further destruction. The introduced birds do not belong to the jungle, where, indeed, land birds are seldom seen. Mammals are represented by rats, mice, and bats, and the tenrec runs wild everywhere. Of reptiles we obtained about eleven species of lizards and three snakes. The crocodile would once seem to have been a regular inhabitant, but the last was killed about seventy years ago. Three of the apparently four species of frogs occur at any elevation, but the fourth is peculiar to the high jungles. Cœcilians are numerous, the one genus being an earth burrower, and the other lying under damp leaves in the jungles. Mollusca were represented among the indigenous vegetation by twenty-five to thirty species, including two slugs, and we obtained a fair variety of insects and arachnids. Isopods were numerous everywhere, but centipedes and millipedes were scarce on the high lands, and seemed to consist of species peculiar to them. We carefully searched for *Peripatus*, but do not think it exists in the archipelago. Land worms were scarce; one species was peculiar in living within the bases of the screw pine leaves, even 40 feet to 50 feet above the ground. We obtained no land leeches or Turbellarians, but found two species of Nemerteans at about 2000 feet.

The fresh-waters consist of certain pools near the sea and a large number of tiny mountain streams, which become roaring torrents in the wet season, but never dry up. In a pool at La Digne we obtained one tortoise with hinged plastron, and in the streams there were four species of fish. The Crustacea comprise at least two species of prawn and a crab, all living up to more than 2000 feet. The Mollusca number only three, and for the rest there were the usual genera of fresh-water insects, &c.

The number of species of land and fresh-water animals would on the whole appear to be singularly few, and individuals were, with a few exceptions, by no means abundant. Their small variety may be due to the comparatively few plants which grow in the islands, but one is inclined to question the former connection of the group with any larger land mass. In any case, our work has made certain that the archipelago has been sufficiently collected for a thorough examination into this question from a biological point of view. It is our opinion, however, that such a research should include both animals and plants considered together. In any case, the Seychelles is the continuation of a broken line extending north from Madagascar, and its rock would seem to be similar to that which forms the great central plateau of that island.

Since I returned to England I have received a letter from Commander Boyle Somerville giving the soundings obtained by H.M.S. *Sealark* on her return to Ceylon from the Seychelles. He has confirmed by additional soundings the complete separation of the 2000-fathom lines of the Chagos, Maldive, and Seychelles groups. I have also heard from Mr. D. Matthews that he has obtained about 1000 samples of sea-water from the Indian Ocean during the last nine months, and analysed about 700. Mr. Bainbrigge Fletcher, H.M.S. *Sealark*, reports that a considerable number of the Chagos Lepidoptera appear to be new species or varieties.

J. STANLEY GARDINER.

Zoological Laboratory, Cambridge, January 15.

What Causes the Destructive Effects of Lightning?

I ENCLOSE a cutting from the *Hampstead and Highgate Express* (January 20) containing an epitome of a lecture which I lately gave at the local scientific society on a case of death by lightning which occurred on the Heath in the month of July last.

I discussed, amongst other matters, the question as to how the more destructive effects of lightning were produced, and now my object in writing to NATURE is to ask

you, Sir, or any of your readers, if you can inform me whether this question has been solved in any probable manner. In the case of the death of an animal from lightning I think we may safely rest on the word electricity as sufficient, for it is not difficult to understand how this form of energy when let loose in the organism of an animal should not only disturb the equilibrium of the machinery, but actually stop it. But the word electricity does not seem sufficient to account for the more destructive effects produced by lightning, which closely resemble those which arise from other well known allied forces. Heat certainly is produced, as we see by the burning of the flesh and by its effects on metals, but as regards the destruction of trees, buildings, and other imperfect conducting substances, the forces seem to be of an explosive character, as are mentioned in the accompanying extract from my lecture.

"The subject which was of most interest to the lecturer was the nature of the destructive agency of the lightning flash, and the present fatal case he thought threw a considerable light upon it. Of course, there was no difficulty in understanding how an electric shock can kill an animal suddenly by bringing the machinery to a stop, when it is considered how fearfully and wonderfully we are made, and that vital processes are at work in every part, when a violent electric shock comes and arrests all these at once. But it is not so easy to perceive how all the more marked and mechanically destructive processes occur, such as the splitting of the timbers in the hut or tearing off the clothes. The destructive effect seemed to be exactly of the kind which follows explosions of gunpowder and kindred substances. This could only occur through a gas being suddenly formed; but whether this would be the production of the vaporisation of a liquid or the formation of some new conditions of the atmosphere by the electricity itself cannot at present be determined. The first object struck by the lightning was the finial, and this was split into numbers of pieces in the direction of the grain of the wood, and the same effect was seen on all the upright posts down which the lightning ran; but, midway across the middle of the hut was a transverse beam, through which the flash passed. At this spot about a foot of the wood was torn off, but in a transverse or horizontal direction in the course of the grain. If a chisel had been driven into the cross beam it would have broken the wood exactly in the same manner; or, indeed, any other force acting on the middle of the splintered wood as an explosive. The coat, and more especially the shirt, showed the explosive force which had produced the rents still better. Although the rents ran down the arm, they had no appearance as if done by an instrument, but rather by a violent pull exerted from side to side, for not only was there one large rent, but similar partial ones running parallel to it. These could only have been done by forcibly stretching from within; in fact, the only way suggested would be an explosion of gas taking place in the shirt sleeve, and so forcibly thrusting it out, causing the fibres of the fabric to give way. The split boot, which was nearly off the foot of the child, could not be imitated except by placing a charge of dynamite within it."

Not professing to have much knowledge of what has been written on the modes and causes of the great destruction caused by lightning, I am writing to obtain more information on the subject.

SAMUEL WILKS.

January 20.

The Probable Volcanic Origin of Nebulous Matter.

IN papers published some fifteen years ago (see, among others, Nos. 2 and 4 of *Contributions from the Lick Observatory*) I considered certain phenomena produced by streams of finely divided matter ejected from the sun, each stream necessarily taking on the form of a helix, and stated that the nebulosities surrounding certain stars were probably caused by the presence of streams similar to those which produce the solar corona.

In an effort to explain the fact that in certain spiral nebulas two diametrically opposite streams are, as a rule, most conspicuous, Prof. Chamberlin advanced the theory (see *Astrophysical Journal* for 1901, p. 17) that the disruption of one body through tidal action and centrifugal

force caused by the near passage of another body moving with great velocity would account for the observed phenomena. I am of the opinion that no forces except those originally resident in the central body itself are essential for the creation of such structures.

As a supplement to my note in NATURE for January 14, 1904, I now wish to offer a very simple theoretical explanation of the manner in which the ejective force becomes so very powerful.

As a result of the decrease in temperature from the centre to the surface of an incandescent mass exposed to the cold of space, the surface-crust finally formed will be punctured at various points by the imprisoned gases, thus also allowing the more refractory matter from the interior to overflow the region immediately surrounding each vent; the increased weight of the locally thickened crust causes the lower opening (of the channel formed) to be depressed below the general level; as the height of the surface-cone increases the simultaneously formed inverted cone is forced deeper and deeper into the regions of greater temperature and pressure, where matter exists in the form of compressed gases. The more easily volatilised materials of the depressed mass will be dissipated, leaving only the more refractory elements to form the inverted cone.

So long as there is a free flow of gaseous matter, the higher the volcanic cone the greater will be the ejective force, and, owing to internal reactions, diametrically opposite vents will be most powerful. We therefore reach, as it seems to me, the theoretical conclusion that *in the act of cooling, an originally incandescent body has the power to create conditions which will enable it to remove a part of its mass, in a finely divided state, to distances which may be far beyond the sphere of its own sensible attraction.*

J. M. SCHAEERLE.

Ann Arbor, January 8.

On an Alleged New Monkey from the Cameroons.

IN NATURE for October 26, 1905, Dr. H. O. Forbes described, as representing a new species, a monkey (Guenon) from the Cameroons, which he named *Cerco-pithecus crossi* in compliment to Mr. Cross, of Liverpool, to whom it belonged. The description tallied so closely with that of *C. preussi*, based by Matschie in 1898 upon specimens also from the Cameroons, that I strongly suspected the two species would prove to be identical. That this is the case I have now no hesitation in affirming after examining the type of *C. crossi*, which Mr. Cross has sent to the Zoological Gardens in London.

R. I. Pocock.

Zoological Society's Gardens, January 17.

Sounding Stones.

It may be of interest to add to the list of musical stones provided by your correspondents another limestone, viz. the very hard, crystallised, coral rock of the coasts of British East Africa. Among the bizarre forms assumed by these rocks under the erosion of the sea, isolated pillars with projecting arm at the top, like a gallows or an inverted capital "L," are common in places. This horizontal arm in many cases gives a clear musical note when struck with a stone or hammer, being thus a ready suspended natural gong.

CYRIL CROSSLAND.

Broughton in Furness, January 18.

Chinese Names of Colours.

IN NATURE of January 11 (p. 246) Mr. A. H. Crook refers to some colour terms used by Chinese. *Ts'eng* (Cantonese) or *ch'ing* (Pekingese) is a vague Chinese term applied to black, grey, "neutral tint," ocean green, sky colour, blue, &c., but nearly always with a gloss or sheen upon it. The fresh turnip-like pears of China are called in Canton *süt*, *li*, or "snow-pears" (the small circle following the *t* indicating the "tone" of the word). Williams's Dictionary of 1878 gives *hsüeh-ch'ing* (Pekingese) or *süt-ts'eng* (Cantonese) as "a purple colour," and the allusion is evidently to that bluish glassy tinge that frozen snow takes, as seen in glaciers, icebergs, and so on; in short, all "vitreous" or glassy hues, from beer-bottles to mother-of-pearl, are *ts'eng*.

E. H. PARKER.

THE WORK OF THE NATIONAL ANTARCTIC EXPEDITION.¹

CAPTAIN SCOTT is warmly to be congratulated on the two interesting volumes in which he describes the work of the National Antarctic Expedition and gives his conclusions as to its results. The book, naturally dedicated to Sir Clements Markham, is a most valuable contribution to the knowledge of what will probably always be one of the most interesting parts of the Antarctic continent. It is written in a charmingly easy and fluent style; the narrative is modest and frank; and the story is always pleasant reading, from its evidence of the uniform good temper which prevailed throughout the expedition, of Captain Scott's capacity for handling his men, of his sympathetic appreciation of their high endeavour, and of his keen interest in all branches of the work. The book is illustrated by a series of fine photographs, many of which were taken by Lieut. Skelton, and its value is greatly increased by the beautiful sketches of Dr. Wilson.

The story of the expedition is full of incident and adventure, in most of which Captain Scott had a large share, as he exposed himself to its greatest risks. The two main achievements of the expedition are Captain Scott's fine sledge journeys with Dr. Wilson and Lieut. Shackleton to the farthest south, and with Evans and Lashly to the farthest west that was reached in Victoria Land. Both these undertakings were daring and arduous in the extreme. The sledge journey to the south reached the latitude of $82^{\circ} 16' 33''$ from $77^{\circ} 51'$, and this spirited performance would probably have been even more successful but for the death of the dogs. The journey westward on to the plateau of Victoria Land Captain Scott describes as even more severe than that to the south, and regarding it he says:—"I cannot but believe we came near the limit of possible performance."

The scientific results of the expedition cannot yet be fully stated, as the collections and observations have not been worked out; and we shall have to wait in most cases for the reports of the experts to whom the material has been entrusted. Captain Scott's book contains accounts of the chief work in geography, in vertebrate zoology, and in geology. The Antarctic mammals and birds are described in an interesting chapter by Dr. Wilson, in which the most important contribution is the account of the life-history of the emperor penguin, which was studied on its breeding-grounds by himself and Lieut. Skelton. The volumes contain no technical information about the invertebrates, &c., and it is disappointing to learn that we cannot expect any additions to the deep-sea fauna of the Southern Ocean. The wealth of new material collected by the *Challenger* in its one deep haul in the Antarctic, led to hopes that valuable results would be achieved by the powerful deep-sea equipment of the *Discovery*; but apparently it was very little used, owing to the short time spent at sea, and possibly on account of the limited coal supply. One dredging is referred to at the depth of 610 fathoms, another at 100 fathoms, and a third, also in shallow water, off the great ice-barrier. The invertebrate fauna, of which Mr. Hodgson has already described elsewhere some of the more interesting discoveries, seems to have been chiefly collected under the ice in McMurdo Sound by means of his very ingenious devices.

The principal geological results are stated in a

¹ "The Voyage of the *Discovery*." By Captain R. F. Scott, C.V.O. Vol. i. Pp. xx+556. Vol. ii. Pp. xii+508; with two maps and 272 illustrations. (London: Smith, Elder and Co., 1905.) Price 42s. net.